

Claims

What is claimed is:

1. An electrophoretic display comprising:
a plurality of microcapsules disposed between a pair of substrates, wherein each microcapsule comprises an insulating colored fluid and charged particles dispersed in the colored fluid, and
the microcapsules contact at least the substrate arranged at a display face side of the pair of substrates.
2. The electrophoretic display according to claim 1, wherein mutually adjoining microcapsules contact each other.
3. A method for making an electrophoretic display including a plurality of microcapsules disposed between a pair of substrates, the method comprising:
disposing a spacer between the pair of substrates to bond the pair of substrates, the spacer having a diameter which is smaller than the diameter of the microcapsules; and
fixing the pair of substrates while pressing the substrates so that the microcapsules contact the pair of substrates.

4. A method for making an electrophoretic display including a plurality of microcapsules disposed between a pair of substrates, the method comprising:

applying a microcapsule dispersion material including a binder and microcapsules dispersed in the binder on the substrate lying at the display face side of the pair of substrates and drying the substrate; and

bonding the pair of substrates.

5. The method for making an electrophoretic display according to claim 4, wherein the binder comprises an emulsion adhesive and water;

the microcapsule dispersion material is compounded so that the microcapsule dispersion material contains 50% or less by weight of the microcapsules, and the emulsion adhesive after drying contains 10% by volume or less of the microcapsules; and

the microcapsule dispersion material is applied to a thickness which is one to three times the diameter of the microcapsules.

6. An electronic apparatus comprising the electrophoretic display according to claim 1.

7. An electrophoretic display comprising:

a pair of substrates; and

a plurality of microcapsules in which a plurality of particles and fluid are contained, the microcapsules arranged between the substrates,

wherein each of the plurality of microcapsules is different in shape and in contact with each other.

8. The electrophoretic display of claim 7, wherein each of the microcapsules is deformed so as to fill gaps formed therebetween.

9. The electrophoretic display of claim 7, wherein the plurality of particles are electrically charged and the fluid is colored.

10. The electrophoretic display of claim 7, wherein the plurality of particles comprise a first group of particles and a second group of particles; and

the particles of the first group are positively charged and the particles of the second group are negatively charged.

11. The electrophoretic display of claim 10, wherein the first group of particles and the second group of particles are different in color.

12. The electrophoretic display of claim 11, wherein the fluid is transparent.

13. An electronic apparatus comprising the electrophoretic display of claim 10.

14. An electrophoretic display comprising:

a first substrate including an electrode and a second substrate including an electrode opposing the first substrate, the electrodes providing an electric field therebetween; and

a plurality of microcapsules dispersed in a binder arranged between the substrates, the plurality of microcapsules each including a first group of charged particles and a second group of charged particles dispersed in a fluid, the first group of charged particles having a charge opposite to the charge of the second group of charged particles,

wherein the first group of charged particles migrate in a direction of the electric field and the second group of charged particles migrate in a direction opposite of the electric field.

15. The electrophoretic device of claim 14, wherein the first group of charged particles are a first color and the second group of charged particles are a second color.

16. The electrophoretic device of claim 14, wherein the first group of charged particles are positively charged and the second group of particles are negatively charged.

17. The electrophoretic device of claim 14, wherein each of the microcapsules is deformed so as to fill gaps formed therebetween.

18. An electronic apparatus including the electrophoretic device of claim 14.

19. An electrophoretic device comprising:
- a first substrate including a first electrode;
 - a second substrate including a second electrode, the first and second electrode providing a positive or a negative electric field therebetween;
 - a microcapsule dispersion material including a plurality of microcapsules and an emulsion adhesive that is compounded so that the microcapsule dispersion material contains 50% or less by weight of the microcapsules, and the emulsion adhesive after drying contains 10% by volume or less of the microcapsules; and
 - each of the microcapsules containing at least one first particle and at least one second particle dispersed in a fluid, the first particle being positively charged and the second particle being negatively charged such that when the positive electric field is provided, the first particle is migrates away from a direction of the electric field and the second particle migrates toward the direction of the electric field.
20. The electrophoretic device of claim 19, wherein the first particle is a first color and the second particle is a second color.
21. The electrophoretic device of claim 19, wherein each of the microcapsules is deformed so as to fill gaps formed therebetween.
22. An electronic device including the electrophoretic device of claim 19.